UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,590	10/23/2001	Norman C. Chan	499059-B-01-US (Chan)	6481

			EXAMINER
47523	7590	08/29/2005	LERNER, MARTIN

JOHN C. MORAN, ATTORNEY, P.C.
4120 EAST 115 PLACE
THORNTON, CO 80233-2623

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 08/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>01 August 2005</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1 to 14 and 21 to 25* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1 to 14 and 21 to 25* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed
> publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2.   Claims 1, 2, 11, 12, and 21 to 24 are rejected under 35 U.S.C. 102(a) as being

anticipated by *Dans*.

Regarding independent claims 1 and 21, *Dans* discloses a method and

apparatus for call classification, comprising:

"a receiver for receiving audio information from the called destination endpoint" –

in a first embodiment, resource manager 30 manages placing telephone calls to bank

information systems ("the called destination endpoint") from calling computer 32, and

verbal messages are generated by a bank information system; state machine 40 places

a call to a bank information system, and in response to verbal messages generated by

the information system ("receiving audio information"), enters DTMF codes necessary to

move through the system (column 5, line 60 to column 6, line 32: Figure 2); in a second

embodiment, a system 100 dials telephone numbers ("the called destination endpoint")

to automatically verify the status, and makes a record of any verbal messages received

in response ("receiving audio information") (column 13, lines 30 to 37: Figure 6);

"automatic speech recognizer for determining words in the received audio information" – voice recognition software is provided so that state machine 40 can recognize the verbal responses ("determining words in the received audio information") generated by each bank information system (column 6, lines 32 to 44: Figure 2); state machine 140 recognizes any verbal messages generated in response, and passes the information to a speech recognition program 146 to perform speech recognition (column 14, lines 18 to 30: Figure 6);

"an inference engine for classifying the call destination endpoint in response to the determined words, where the call classification specifies at least one of the endpoint is busy or the call is being redirected" – results of speech recognition are sent back to state machine 40 ("an inference engine") (column 6, lines 42 to 44: Figure 2); state machine 40 recognizes various states to move through a bank information system ("classifying the call destination endpoint in response to the determined words") (column 5, line 60 to column 6, line 4: Figure 2); state machine can recognize when a banking system will transfer a call to a live operator ("the call is being redirected") (column 9, lines 8 to 10), retries if a bank information system is busy (column 9, lines 26 to 33), and automatically re-queues calls when a busy signal is detected ("the endpoint is busy") (column 12, lines 8 to 11); state machine 140 detects when a number is changed (column 15, line 64 to column 16, line 14), and when a called number is busy ("the endpoint is busy") (column 15, lines 15 to 17).

Regarding claims 2 and 22, *Dans* discloses system 10 is designed to listen to recognized verbal messages of 2 to 10 seconds (column 6, lines 48 to 52); additionally, a context database 52 provides context to describe all messages that could be heard at any particular point in a call to a bank's information system, where the number of messages in a "context" is small (e.g., less than 10 messages) (column 6, lines 55 to 66); implicitly, "context"-based messages having a time period of 2 to 10 seconds are "phrases".

Regarding claim 11, *Dans* discloses a state machine 40, 140, which receives results of verbal responses for determining a state within a bank information system or a status of a telephone number, and which is equivalent to "an inference engine".

Regarding claims 12 and 24, *Dans* discloses detecting status information on a "D" channel used for ISDN signaling, where this information includes whether a called number is being rung, is busy, or is out of order (column 15, lines 1 to 19); implicitly, detecting "D" channel signaling involves tone detection; additionally, state machine can recognize when a busy signal is detected (column 12, lines 8 to 11), which involves detection of tones.

Regarding claim 23, *Dans* discloses determining additional states of a bank information system, including whether a message cannot be matched (column 11, lines 15 to 36), and whether a number has changed or is disconnected (column 14, lines 38 to 67).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 3 to 10 and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over *Dans* in view of *Setlur et al.*

Dans discloses speech recognition in an automated system for accessing

speech-based information, but omits the details of a procedure for speech recognition.

However, *Setlur et al.* teaches speech recognition for barge-in and aural prompts,

where features are extracted (column 4, lines 45 to 47: Figure 3: Step 306 – Claim 3),

likelihood scores are compiled by comparing features to hidden Markov models (column

4, lines 50 to 52: Figure 3: Step 308 – Claims 4 and 25), performing dynamic

programming to build a word network of possible word sequences from active node

model scores using a Viterbi algorithm, and updating a decoding tree (column 4, lines

52 to 57; column 4, lines 61 to 63: Figure 3: Steps 310 and 314 – Claims 5 and 6),

performing a beam search for pruning away unlikely word sequences and storing an

updated active word list (column 4, lines 57 to 61: Figure 3: Step 312 – Claim 7),

building a network of word sequences and updating a decoding tree built to provide the

most likely word sequence (column 4, lines 52 to 63: Figure 3: Steps 310 and 314 –

Claim 8), and backtracking through the beam search path using a Viterbi algorithm to

output the most likely word sequence after the utterance is declared to be completed

(column 5, lines 52 to 55: Figure 3 – Claims 9 and 10). *Setlur et al.* suggests an

objective of determining an end of an utterance that is faster, and reliably detects a

group of words within an utterance in real time as partial word sequences. (Column 2,

Lines 60 to 67) It would have been obvious to one having ordinary skill in the art to

provide a speech recognition procedure as taught by *Setlur et al.* in an automated

system for accessing speech-based information by speech recognition of *Dans* for the

purpose of quickly and reliably detecting an end of an utterance within a group of words.

5.   Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable

over *Dans* in view of *Heilmann et al.*

Dans discloses that state machines 40, 140 can recognize both verbal messages

and "D" channel ISDN signaling information, but omits the details of detecting a tone by

energy analysis or zero crossings. It is well known for telecommunication equipment to

analyze audio features of energy and zero crossings to distinguish voice from tones.

Specifically, *Heilmann et al.* teaches a system and method to discriminate call content

type, where a process 300 performs an algorithm to distinguish the content of a call as

either voice or voice band data (VBD) by determining the number of zero crossings of

each frame and the energy of each frame. (Column 6, Lines 34 to 59: Figure 3: Steps

306 and 308) Voice band data (VBD) can be DTMF tones. (Figure 2B) *Heilmann et al.*

suggests call content type discrimination for a telecommunications firewall to enhance

security. (Column 1, Lines 13 to 20) It would have been obvious to one having ordinary

skill in the art to analyze audio features of energy and zero crossings to discriminate

voice from tones as taught by *Heilmann et al.* in an automated system for accessing

speech-based information by speech recognition of *Dans* for the purpose of enhancing

security of telecommunication equipment.

Response to Arguments

6.   Applicants' arguments filed 01 August 2005 have been considered but are moot

in view of the new ground of rejection.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to

Applicants' disclosure.

Farrell, Chou, Baldi, Hird et al., and Bash et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Martin Lerner whose telephone number is (571) 272-

7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to
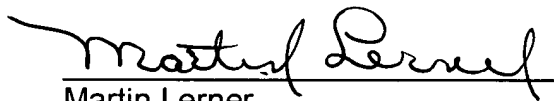
Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone

number for the organization where this application or proceeding is assigned is 703-

872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

ML
8/24/05

Martin Lerner
Examiner
Group Art Unit 2654